**In the Claims**

Please amend the claims as follows:

1. (previously presented) A device for creating microgradients in solution comprising:

a microfluidic channel with openings at each end and two or more apertures in the channel walls;

two and only two electrodes: a first electrode placed in or near a first opening at a first end of the channel, and a second electrode placed in or near a second opening at a second end of the channel; and,

an electrical power supply connected to the electrodes; wherein,

the apertures are continuously in contact with an external fluid bath while the openings are isolated from the bath.

2. (original) A device as in Claim 1 wherein the power supply is connected to the electrodes such that several distinct current paths exist from one end of the channel to the other and current flows along all of these paths when an electric field is applied along the channel by the combination of the power supply and the electrodes.

3. (original) A device as in Claim 1 wherein the power supply is connected to the electrodes such that simultaneous flow of fluid occurs

through two or more of the apertures and a chemical concentration gradient is formed near the apertures.

4. (original) A device as in Claim 1 wherein the length of the channel is between about ten microns and ten millimeters, the transverse dimension of the channel is between about 0.1 and one hundred microns, and the dimensions of the apertures are between about 0.1 and ten microns across.

5. (original) A device as in Claim 1 further comprising structures that form indentations in the channel near the apertures, such indentations being approximately the size of a living cell.

6. (canceled)

7. (canceled)

8. (canceled)

9. (previously presented) A microfluidic device comprising:

a microfluidic channel defining a flow path for a fluid having a known concentration of a selected chemical, the microfluidic channel

comprising a plurality of apertures defined in the channel for providing continuous fluid communication between the channel and a reservoir containing a sample solution, and an inlet and an outlet that are isolated from the reservoir;

electric field means provided for inducing electroosmotic flow along the flow path, wherein the electric field means comprise a number of electrodes that is less than or equal to the number of apertures; and,

means for applying pressure to the fluid in the flow path such that fluid flows simultaneously out of the channel at the apertures and forms a concentration gradient at the apertures along the channel such that cells cultured near each aperture are exposed to a separate concentration of the chemical corresponding to the location of the aperture along the concentration gradient.